

PROCEEDINGS
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BIOLOGICAL SOCIETY OF WASHINGTON

DISPOSITION OF SPECIES OF TERRESTRIAL ISOPOD
CRUSTACEANS OF THE GENERA *SYNUROPUS*,
SPHERARMADILLO, *SPHAERONISCUS* AND
SCLEROPACTES (ONISCOIDEA,
SPHAERONISCIDAE)

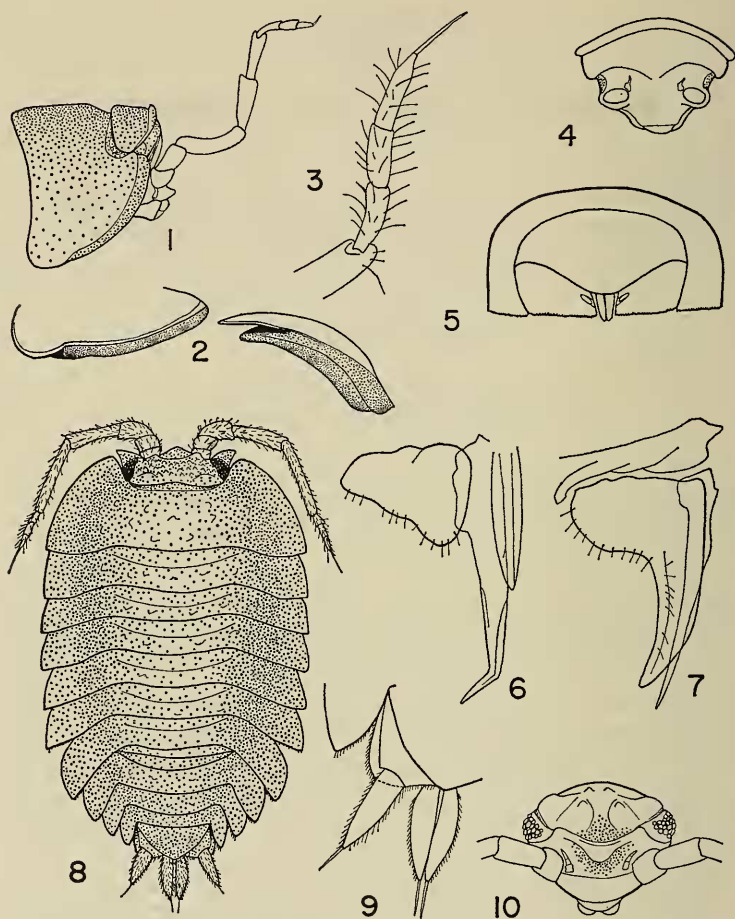
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Specimens of two genera of terrestrial isopod crustaceans described by Richardson (*Synuropus* Richardson, 1901, and *Spherarmadillo* Richardson, 1907) are discussed here. *Synuropus* is found to be a junior synonym of *Scleropactes* Budde-Lund, and only minor differences (mainly lack of eyes) are found to separate *Spherarmadillo* from *Sphaeroniscus* Gerstaecker as redefined by Vandel (1963, 1964). Another species said by Mulaik (1960) to belong to the genus *Scleropactes* is transferred to *Armadilloniscus* Uljanin. Two species from Columbia described as *Sphaeroniscus* species by Pearse (1915) are also transferred to *Scleropactes*. All genera mentioned except *Armadilloniscus* are in the family Sphaeroniscidae as defined by Vandel (1964).

Spherarmadillo schwarzi was described by Richardson (1907) from a single female 18 mm long by 8.5 mm wide (not 50×22 mm as stated in the original description!) from Livingston, Guatemala. The type specimen (USNM 33471) and many other specimens from Trece Aguas, Guatemala (USNM 57379-80-81), were examined by the author and were found to be correctly placed in a separate genus by Richardson, and the new genus correctly placed near *Sphaeroniscus*.

The specimens of *Spherarmadillo* principally differ from specimens of *Sphaeroniscus* as defined by Vandel (1963, p. 88) in that they are without eyes. The coxapodal ridge is not developed along the entire length of the underside of pereopod



FIGS. 1-7. *Spherarmadillo schwarzi* Richardson (1907). 1. lateral view, peraeonal segment I and cephalon. 2. details, lateral margin of peraeonal segment I. 3. flagellum, antenna 2. 4. Cephalon, frontal view. 5. pleotelson. 6. pleopod 1, male. 7. pleopod 2, male. FIGS. 8-10. *Scleropactes grandulatus* (Richardson) new combination, dorsal view female, holotype. 9. uropod. 10. cephalon, frontal view.

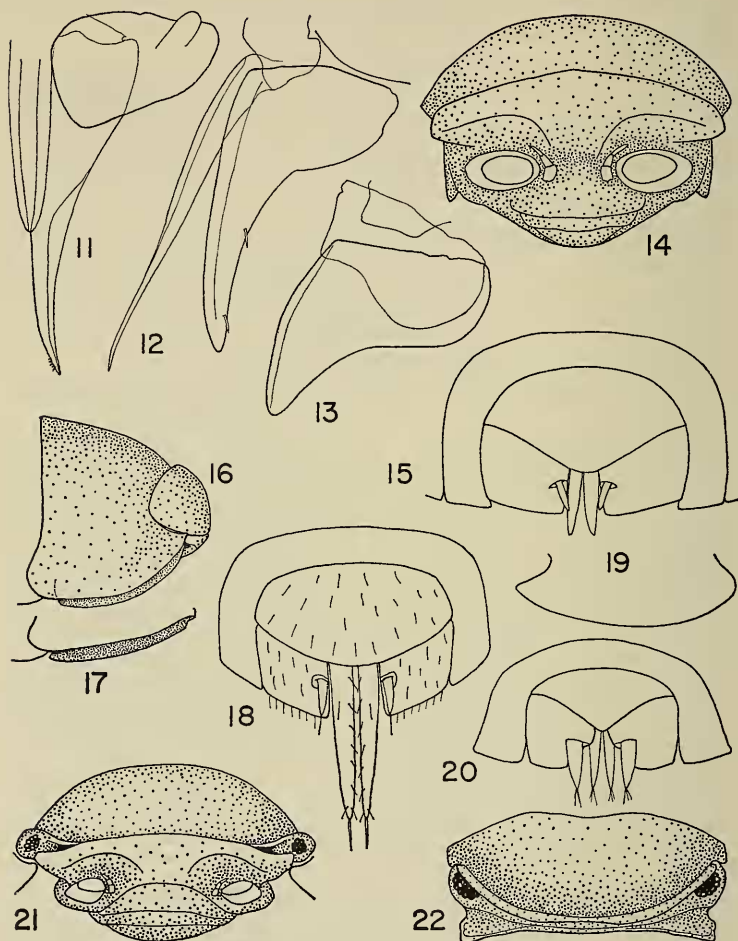
segment I as implied by Van Name (1936), but instead it is a sulcus or groove on the posterior portion of the margin. An angular border (a beveled edge) is found on the anterior and longest portion of the margin (see figs. 1 and 2 here—Richard-

son's figure "c" is misleading) and the notched portion is on the posterior part. The mouth parts include a maxilla, 1 which has two pencillate tufts of sensory setae.

The specimens from Trece Aguas (in three vials with three numbers; all collected in June 1907) were examined and consist of 11 females, the longest being 19 mm long, and one male 14 mm long. One female was gravid, but the marsupium had been disturbed so the embryos it contained were not counted. There is no doubt that the specimens are *S. schwarzi*. The first and second pleopods of the male (USNM 57381) were examined and are illustrated here (figs. 6 and 7). No pseudotracheae were found on either of the exopods, a further characteristic of the family Sphaeroniscidae. The correct name for the species is still *Spherarmadillo schwarzi* Richardson (1907).

Mulaik (1960) described two blind species from Mexico which he included the genus *Spherarmadillo*—*S. huatuscensis* and *S. cavernicola* (the latter from a cave). According to Mulaik there is a difference in the frontal margins of the cephalons, and in the lengths of the uropodal rami (cf. figs. 15 and 18). Both species are shorter than *S. schwarzi* (*S. huatuscensis*—7 mm; *S. cavernicola*—4 mm). *S. huatuscensis* (not well defined) differs from both species in possessing especially long uropodal rami. No specimens of *S. huatuscensis* were examined by the author.

Specimens of *S. cavernicola* from a cave at Rancho de Cielo, Tamaulipas, Mexico, were examined (USNM 255216) and the species is illustrated here (figs. 11 to 17). None of the many specimens examined were much over 4 mm long and the species is remarkably like *S. schwarzi* differing mainly in the configuration of male pleopods (cf. figs. 6 and 7 and figs. 11 and 12) and in the average size of the specimens. There is also some difference in the types of lateral margins on pereopodal segment I—in *S. schwarzi* it is beveled or angular; in *S. cavernicola* it is more of a groove or "step" being slightly indented along most of the entire length. *Spherarmadillo* Richardson contains three species, two from Mexico and one from Guatemala.



FIGS. 11-17. *Spherarmadillo cavernicola* Mulaik (male). 11. pleopod 1. 12. pleopod 2. 13. pleopod 3. 14. cephalon. 15. pleotelson and uropods. 16. lateral view peraeonal segment I and cephalon. 17. detail, margin of peraeopod I. Fig. 18. *Spherarmadillo huatuscensis* Mulaik, pleotelson and uropods (after Mulaik). Figs. 19-22. *Scleropactes columbiensis* (Pearse) new combination. 19. detail, margin peraeopod I. 20. pleotelson and uropods. 21. cephalon, anterior view. 22. cephalon, dorsal view.

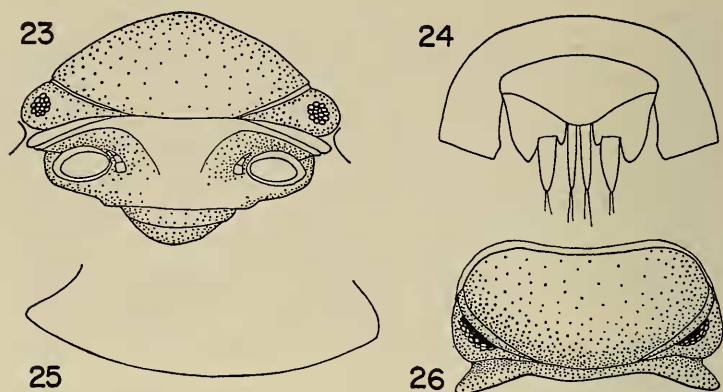
Synuropus grandulatus was described by Richardson (1901) from a single female 6.2 mm long from El Yunque, Puerto Rico at 2800 ft. altitude. Her illustration of the species lacked detail and her description was brief. In 1905 (p. 599) she repeated the description, and it was again repeated by Van Name (1936, p. 222). Since the species was not well described, it was placed by Van Name in the Oniscidae—"it would seem to be close to *Alloniscus*, if really separable from it," he stated. The author examined the type specimen of *S. grandulatus* (USNM 23912) and concluded that it is not a member of the Oniscidae, but rather belongs in the genus *Scleropactes* (Sphaeroniscidae).

Additions and corrections to Richardson's description of the species follow:

Body oval, not able to roll into a ball, with lateral parts of segments expanded and recurved. Dorsum of body covered with minute tubercles (Richardson's illustration exaggerates the size and pattern of the tubercles) which are more apparent on the anterior part than on the posterior part of the body. Cephalon deeply set into peraeonal segment I, where rounded anterior angulations reach beyond compound eyes of many ocelli. Anterior margin of cephalon produced as obtusely pointed medial lobe. Lateral lobes well defined and acutely pointed. Ridge somewhat continuous with frontal line above eye and separating it from lateral cephalic bump. Flagellum of short antenna 2 with three subequal articles. Two pectinate setae on endopod of maxilla 1.

Peraeonal segment I wide and flared or slightly recurved. No marginal sulcus or coxal indications of any kind present on segment I. Other segments of subequal proportions with lateral margins of peraeon parallel for much of length. Pleon with margins continuous with peraeon; lateral margins of segments 1 and 2 hidden and 3, 4 and 5 recurved. Pleotelson with posterior border obtusely (somewhat angularly) rounded. Basis of uropod with sulcus along outer margin and with expanded lateral and posterior ventral edge of sulcus. Endopods close together and extended beyond subsimilar exopods. Richardson states that the color (now faded) is "brown, mottled with black."

The small female shares characters with species of the genus *Scleropactes* Budde-Lund. The cephalon is shaped much like that illustrated by Jackson (see Van Name, 1936, p. 292, fig. 270) in that there is a furrow or line above each eye. The configuration of the basis of the uropod also is like that of some species of *Scleropactes*. The lack of ability to roll into



FIGS. 23–26. *Scleropactes gaigei* (Pearse) new combination. 23. cephalon, anterior view. 24. pleotelson and uropods. 25. detail, margin peraeopod I. 26. cephalon, dorsal view.

a ball is characteristic of several species which are also dorsoventrally flattened as in *S. grandulatus*. *S. estherae* Arcangeli (1930) is closest to *S. grandulatus* in many characters although there are many differences between the species. Neither species is able to roll into a ball and both are dorsoventrally flattened. The species of the genus are diverse and more work must be done to more properly define them, but it is clear that as now defined Richardson's specimen is really *Scleropactes grandulatus* (Richardson, 1901).

Pearse (1915) described two species of *Sphaeroniscus* from Columbia—*S. columbiensis* (USNM 98374) and *S. gaigei* (USNM 98378). The University of Michigan type specimens are now in the Smithsonian Institution. Both of the species were reexamined and some aspects of each are illustrated in figures 19–22 and 23–26, respectively. The specimens lack the particular ridge and notch on the lateral margin of peraeonal segment I peculiar to species of *Sphaeroniscus* as restricted by Vandel (1963, p. 88, footnote). Since the specimens of both species lack the notch, they are in the newly defined genus *Parsphaeroniscus* Vandel.

The specimens of both species, however, have a pronounced ridge on the cephalon just over the eye. There are no well

defined cephalic bumps on either as is characteristic of *Scleropactes grandulatus* (fig. 10). The basis of the uropod in both species is produced on the lateral posterior margin with the exopod emerging from a notch in the medial posterior margin thus formed. Pearse's illustration of *S. columbiensis* (p. 548, fig. 8 u) shows the exopods attached at the medial corner of the basis, but they were not that way in the type specimen examined by the author (fig. 20). Unfortunately, because there were only a few specimens, the male pleopods were not examined. Adult specimens of *S. columbiensis* are large. The type measures 16 mm long and is from the Sierra Nevada de Santa Marta, Columbia, at 4800 ft. found "under leaves and logs" in a forest. *S. gaigei* is smaller (4.4 mm long) and from on San Lorenao, Sierra Nevada de Santa Marta, Columbia, at 7800 ft. found "under leaves in ground." These two species can no longer be retained in the genus *Sphaeroniscus*, but rather they must be placed in *Scleropactes* Budde-Lund, and their proper names are *Scleropactes columbiensis* (Pearse, 1915) and *Scleropactes gaigei* (Pearse, 1915).

Mulaik (1960) included the new species *Scleropactes cedrosensis* (p. 181) in the Eubelidae along with the species of *Spherarmadillo* mentioned above. It is obvious from his illustrations of this species (a single specimen 1.7 mm long) that it is of the genus *Armadilloniscus* Uljanin. Species of *Armadilloniscus* are always found on or near marine beaches. The specimen was most probably found on a beach on Isla Cedros, Baja California, Mexico, and Mulaik's illustration (pl. 17, fig. 342), especially that of the cephalon, is almost identical with Menzies's (1950, p. 479, fig. 19) illustration of the cephalon of *A. lindahli* (Richardson, 1905). Also Mulaik (pl. 17, fig. 346) illustrates a mass of "feathery" setae on the apex of the exopod of maxilla 1; it is comparable to the same structure found in *A. ellipticus* (see Van Name, 1936, p. 102, fig. 45) and is characteristic of species of *Armadilloniscus*, not *Scleropactes*. The large group of setae is also present on maxilla 1 on more obviously unrelated species of *Ligia*. The only difficulty encountered in acception the placement of Mulaik's species in *Armadilloniscus* is that the number of flagellar

articles recorded (p. 182) and illustrated (pl. 17, fig. 342) by Mulaik is three and the number of articles in the flagellum of all known species of *Armadilloniscus* is four. Other than the article number, the general configuration of the antennae, a rather particular configuration, illustrated by both Menzies and Mulaik are in agreement. Blake (see Van Name, 1936, p. 102, fig. 45) erroneously recorded the number of flagellar articles as five for *A. ellipticus* from New England, and the author working with *A. ellipticus* found it difficult to determine the correct article number without a compound microscope and with transmitted light. If the middle flagellar article as illustrated by Mulaik (pl. 17, fig. 342) is divided into two articles, then the flagellum would be composed of four articles each of slightly decreasing length. It would then be almost identical with the flagellum illustrated by Menzies (pl. 25, fig. 22), and strongly suggests that Mulaik's illustration is wrong. *Scleropactes cedrosensis* Mulaik (1960) clearly is a junior synonym of *Armadilloniscus lindahli* (Richardson, 1905), and the record by Mulaik extends the known range of the species from mid-California, to mid-Baja California which is not a improbable range extension.

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